IIMB Management Review (2014) 26, 170—182

available at www.sciencedirect.com

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journal homepage: www.elsevier.com/locate/iimb

A study on determinants of capital structure in India

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Available online 3 August 2014

KEYWORDS
Capital structure;
Indian listed companies;
Leverage;
Corporate finance;
India

Abstract The paper identifies the most important determinants of capital structure of 870 listed Indian firms comprising both private sector companies and government companies for the period 2001—2010. Ten independent variables and three dependent variables have been tested using regression analysis. It has been concluded that factors such as profitability, growth, asset tangibility, size, cost of debt, tax rate, and debt serving capacity have significant impact on the leverage structure chosen by firms in the Indian context.

Introduction

Companies have been struggling with capital structures for more than four decades. During credit expansions, companies have been unable to build enough liquidity to survive the contractions, especially those enterprises with unpredictable cash flow streams which end up with excess debt during business slowdowns. Chief financial officers (CFOs) constantly encounter these questions when managing their balance sheets: firstly, is it advisable to return the excess cash to shareholders or invest it, and secondly, should they finance their new projects by adding debt or raising capital from equity? Achieving the right capital structure by defining the composition of debt and equity for an organization to finance its operations and investments has challenged academics and practitioners alike. Some companies focus on the traditional tax benefit of debt, since interest is often a tax deductible expense, while many other companies hold substantial amounts of cash and explore options of what to do with it. The choice of capital structure for firms is by and large the most fundamental issue of the financial framework of a business entity. Methods by which public corporations finance their assets set up their ownership structure and reflect standards of their corporate governance.

The capital structure most suitable for an organization is a much debated question. While some arguments state that capital structure is not significant in valuing a company's securities or the risk of investing in them, others comment that capital structures have been increasingly affecting

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Peer-review under responsibility of Indian Institute of Management Bangalore.

http://dx.doi.org/10.1016/j.iimb.2014.07.009

both value and risk. The optimal capital structure evolves persistently, and successful corporate leaders must constantly consider factors such as the company and its management, the economy, government regulation and social trends, the state of capital markets, and industry dynamics.

Any decision to increase or reduce leverage depends on market conditions and investors' acceptance of debt. The period between the late-1970s and the mid-1980s favoured debt financing. Subsequently, for the first time in 15 years, in the late '80s, equity market values rose above the replacement costs of book value of assets such as plants and equipment. It was a signal to deleverage. Access to capital markets is not as difficult as it used to be over a decade ago. Businesses are not depending on banks, which now own less than a third of the loans they originate. Quarter one of 2009 saw many corporations taking advantage of low interest rates to raise funds in the global bond market. The financial scenario seems to be where it was in early 1975, when financial statements started showing signs of improvement and organizations with strong capital structures started acquiring other companies. While some companies are raising their finances in the public markets, some are using bond proceeds to pay off short-term bank debt, strengthening their balance sheets and helping re-establish bank liquidity.

The current decade has seen many companies, financial institutions, and governments starting to over -leverage. Without stock buybacks, many such companies would end up having little debt and would have greater flexibility during the period of increased credit constraints. In other words, the current financial problems of such companies are self-imposed. Instead of facing the two recessions with sufficient liquidity and low long term debt, they had the wrong capital structure for those periods. Therefore, the question remains unanswered as to what are the crucial factors that determine a firm's financial decisions. This question gained significance after publication of papers by Modigliani and Miller (1958, 1963). Researchers have investigated various determinants of capital structures but have failed to come out with a unified theory, leaving the subject open for further research.

We have examined 870 companies in India, both private sector and government, and tested a range of hypotheses to determine what factors affect the capital structure decisions. While research on this subject in the context of developed markets has been extensive, research in the context of emerging economies is still in a preliminary stage. There have been significant papers on country-to-country comparisons (Booth, Aivazian, Demirguc-Kunt, & Maksmivoc, 2001; De Jong, Kabir, & Nguyen, 2008; Rajan & Zingales, 1995); some researchers such as Bhaduri (2002) have largely focussed on a few European and Asian countries.

Emerging economies are steadily reaching the debt levels of developed countries. However, the findings from developed markets cannot be extended to capital structure issues prevailing in emerging markets, without ascertaining that companies in both markets follow the same practices while choosing their capital structures. Several researchers argue that the determinants of capital structure are significantly affected by factors such as the laws and regulations of the country, corporate and personal tax systems and corporate governance. It is therefore essential to study the emerging economies as individual countries rather than see them collectively as a group. Consequently, India needs to be studied as a unique case in order to understand the behaviour of firms in the Indian economy. The maturity of the Indian markets is the motivation to study the determinants of capital structure for Indian firms.

The research question to be investigated is: What determines the capital structure in Indian companies? In essence this is a test of the applicability of some of the findings in earlier studies in other countries.

The sub objectives for the research question are to:

- identify factors considered by companies before making financing decisions
- see how these factors affect the value of the firm
- understand how capital structure affects shareholder value
- study the effect of capital structure on the profitability of the organization
- see how capital structure reflects the future plans of the organization

Literature review

The debate on determining the ideal capital structure and value of firms can be traced back to Modigliani and Miller (1958) who in their research concluded that the value of the firm is self-determining of capital structure and that the value of an unlevered firm is equal to that of a levered firm. The research was based on the assumption of absence of taxes. This assumption was considered unrealistic and in their subsequent research Modigliani and Miller (1963) took tax into consideration and concluded that because of tax shield on debt as a factor, the value of a levered firm was more than the value of an unlevered firm and that this value was equal to the value of the tax shield. Modigliani and Miller (1977) later modified their earlier research of 1963 and incorporated the effect of personal taxes. Personal taxes were classified into two categories, tax on income from holdings shares and tax on income from debt securities. In this research (1977), Modigliani and Miller identified certain special cases where gain from leverage became zero, giving the original (1958) result. Thus their results signify the existence of an optimal capital structure at the macro level but not at the micro level.

According to Jensen and Meckling (1976), the optimal capital structure is obtained by trading off the agency cost of debt against the benefit of debt. Here, Jensen and Meckling first identified disputes between shareholders and managers because of management's ownership being less than 100% of the equity. Jensen (1986) proposed that this problem could be reduced by increasing the percentage of shares owned by the manager or by increasing debt in the capital structure. This would result in the reduction of the amount of unused cash available to managers (Jensen, 1986; Stulz, 1990). This would eventually benefit debt financing.

Agency models have shown a positive relation between leverage and firm value, regulatory abidance, probability of

defaults, value at the time of liquidation, freely available cash flows and the significance of managerial reputation. Leverage is expected to be negatively correlated with interest coverage, growth opportunities, and possibility of reorganization following default. It has been said that firm value and leverage are positively associated because these two variables move together in response to some exogenous factors (Hirschleifer & Thakor, 1989). Agency theory has shed light on the theory of capital structure but does not elaborate on all the differences in capital structures observed in practice.

Apart from agency theory, previous research identifies a difference in information about projects or investment opportunities of firms as another theory to explain capital structure. Capital structure can be viewed as an indication given by managers to investors (Leland & Pyle, 1977) or as a way of reducing inefficiencies caused by information asymmetry. The mitigation literature starts with Myers and Majluf (1984).

Harris and Raviv (1990) in their research state that the optimal structure is obtained through a trade-off between liquidation decisions and higher investigation costs. They concluded that high leverage can be an outcome with large firm value, lower probability of reorganization following default, and higher debt level. Stulz (1990) stated that the optimal capital structure can be designed by a trade-off between benefit of debt and cost of debt. His arguments were based on the fact that managers issue debt only if they fear a takeover.

Diamond (1989), and Hirschleifer and Thakor (1989) in their research argued that the asset substitution problem (such as using debt to finance high risk projects instead of equity) could be reduced because of the management's reputation being at stake. While shareholders preferred to maximize an expected return, managers maximized the possibility of being successful. Diamond (1989) argued that as a firm gets older, it chooses less risky projects, thereby reducing its defaults which would lead to a lower cost of debt. This theory suggests that younger firms will have less debt than older ones.

Myers and Majluf (1984) emphasized that if investors were less well informed than company insiders while equity was being issued, it would result in mis-pricing. Mis-pricing can be avoided if firms use external funds followed by low risk debt, and finally, equity to finance new investment. This is called the "pecking order theory" of financing. Krasker (1986) showed in his research that on announcement of equity issues, the price of equity will fall and new projects will be financed by internal funds or low risk debt. Korajczyk, Lucas, and McDonald (1990) argued that the underinvestment problem was less severe after information releases. It could be concluded that firms with less tangible assets in relation to the total firm value would tend to have more information asymmetries.

Constantinides and Grundy (1989) argued that if a firm was allowed a wider range of financing choices, the Myers and Majluf results would be nullified in some cases.

Copeland and Weston (1983) in their research emphasized that bankruptcy costs was one of the causes for differences in capital structure amongst firms. According to them if bankruptcy costs were not assumed away, an optimal capital structure could possibly exist, and lead to a substitution between leverage and likelihood of bankruptcy. Financial securities such as convertible debt and managerial incentives could be used to eliminate agency problems (Dybvig & Zender, 1989).

Haugen and Senbet (1978) argued that if market prices were determined by rational investors then bankruptcy costs would not exist. This argument was supported by Ronn & Senbet in their study (1995). In their development of the static trade-off theory Kraus and Litzenberger (1973) proposed that debt should be obtained to balance the bankruptcy costs and tax savings. Correia, Flynn, Uliana, and Wrmald (2000) concluded that existence of bankruptcy costs reduced the value of tax shield. Mayer (1990) studied the levels of development between financial markets and banks and concluded that level of development could have an impact on the capital structure of individual firms. For instance if the bond market was more developed than the rest of the financial market and the country's banking sector, then the level of debt financing in firms would be on the higher side. Demirguc-Kunt and Maksimovic (1996) found a negative relationship between the level of the stock market and leverage, and a positive relationship between bank development and leverage.

Models based on industrial organization have also been developed to explain capital structure. One such theory examines the relationship between a firm's capital structure and its strategy while another examines the relationship between a firm's capital structure and the characteristics of its products and inputs. Brander and Lewis (1986) showed that under certain defined oligopolistic assumptions, firms in equilibrium choose positive debt levels. Maksimovic (1988) in his research concluded that debt capacity increased with elasticity of demand for a product and decreased with the discount rate. Commenting on the influence of capital structure on customers and suppliers, Titman (1984) stated that capital structure was designed to ensure that shareholders did not liquidate a firm and that debt holders would liquidate a firm only when it declared bankruptcy, and that the firm would default only if the net gains to liquidation exceeded the cost to the company's customers. Sarig (1988) argued that firms which employed workers with highly transferable skills would have more debt.

Firms usually raise funds for new investments internally through retained earnings and externally through equity issues. Masulis (1988) observed a fall in the overall firm leverage between the duration 1946 and 1986, while Taggart (1985) observed a general rise in leverage since the Second World War. Masulis (1988) reviewed the empirical literature on event studies pertaining to security offerings and stock repurchases and concluded that equity increasing transactions result in stock price fall while leverage increasing transactions result in stock price rises.

Studies on the relationship between firm and industry characteristics find similar capital structures within industries. The relative leverage rankings are retained over time (Bradley, Jarrell, & Kim, 1984). Titman and Wessels (1988), among others, found that leverage increased with non-debt tax shields, fixed assets, size of the firm, and growth opportunities, and decreased with profitability, research and development expenditures, advertising expenditures, uniqueness of the product, and volatility.

Research methodology

The objective of the study is to investigate empirically the determinants of capital structure of Indian companies based on well-known optimal capital structure theories using firm specific data.

Objectives

The objective of the study is to identify factors considered by companies before making financing decisions. The questions would be better investigated by breaking the objectives across various models. The sample comprises Indian companies (public sector and government). Considering the three dependent variables (short term debt, long term debt and total debt) and all the 10 independent variables (profitability, growth, asset tangibility, size, cost of debt, liquidity, financial distress, tax rate, debt serving capacity and age), the objectives have been divided into models as under:

Model 1: **Indian companies and short term debt**: To understand the impact of each independent variable while raising short term debt for Indian companies
Model 2: **Indian companies and long term debt**: To understand the impact of each independent variable while raising long term debt for Indian companies
Model 3: **Indian companies and total debt**: To understand the impact of each independent variable while raising total debt for Indian companies

The objectives and hypotheses for each of the three models have been elaborated in Table 2, Table 4 and Table 6 respectively.

Data source

The sample contains cross-sectional data for 870 companies (809 private companies and 61 government companies) listed on the National Stock Exchange, and sourced from *Prowess* (the electronic data base developed and maintained by Centre for Monitoring Indian Economy). The data covers the period from 2001 to 2010. This study used accounting data. The companies have been selected on the basis of availability of complete records for 10 years. Those firms which did not have a complete record on the variables included in the model were excluded. Data collected was tabulated, analyzed, and interpreted using SPSS (Statistical Package for Social Sciences). Average of the 10 year data for each variable per company was taken to derive conclusions and to absorb structural changes if any.

Research methodology

Multiple regression analysis has been used, satisfying all its five assumptions i.e. the Normality Assumption Test, the Homoscedasticity Assumption Test, the Linearity Assumption Test of each of the independent variables with the dependent variable, the Durbin—Watson *d* Statistic Test for detecting serial correlation and the Multicollinearity Test in trying to understand the significant and the insignificant variables.

Explanatory variables

Dependent variables

Total debt ratio (TDR): Total debt ratio is a financial ratio that indicates the percentage of a company's assets that are provided in comparison to debt. It is the ratio of total debt and total assets calculated by dividing total debt to total assets.

Long term debt ratio (LTDR): The long term debt to total asset ratio, at the simplest, indicates the portion of a company's total assets that is financed from long term debt. The value varies from industry to industry and company to company. Comparing the ratio with industry peers is a better benchmark. Long term debt ratio is computed as long term debt/total assets.

Short term debt ratio (STDR): Short term debt is an account shown in the current liabilities of a company's balance sheet. This account is comprised of any debt or repayments incurred by a company that is due within one year. The debt in this account is usually made up of short-term bank loans taken by a company. The ratio is the calculation of debt payable within one year to total assets. The ratio indicates whether a firm will be able to satisfy its immediate financial obligations. It is computed as short-term debt to total assets.

Independent variables

Profitability (PROF): Profitability is the financial benefit that is realized when the amount of revenue gained from a business activity exceeds the expenditure, costs, and taxes needed to sustain the activity. Any profit that is gained goes to the owners of the business, who may or may not decide to spend it on the business. Operating profit rate of return (earnings before interest and taxes (EBIT)/total assets) is used as a measure of profitability. Other measures include return on assets and return on sales (profit margin).

Growth (GROW): Firms with growth options are those that have relatively more capacity expansion projects, new product lines, acquisitions of other firms and maintenance, and replacement of existing assets. Firms with high growth options and high cash flow volatility have incentives to decrease debt in their capital structure over a period of time. Growth is measured by the growth rate in total gross assets. The growth factor is measured by the percentage change of assets.

Assets tangibility (TAN): Asset tangibility refers to all types of tangible assets (e.g. land, building, machines and equipment) that possess some degree of debt capacity. The formula used in this study to measure the value of tangible assets of the firm is the ratio of net fixed assets to total assets.

Size (SIZE): Large firms are often more diversified and have more stable cash flows; the probability of defaults for large firms is smaller compared to smaller ones. Thus the financial distress risk can be considered lower for larger firms. The measure of a firm's size used in this study is the natural logarithm of its total assets.

Cost of debt (COD): Cost of debt is the effective rate that a company pays on its current debt. This can be measured by either before- or after-tax returns. Since interest expense is deductible, the after-tax cost is seen most often. This is one part of the company's capital structure, which also includes the cost of equity. The measure of cost of debt in the study is using interest before tax/long term debt.

Liquidity (LIQ): Liquidity is the ability to convert an asset to cash immediately. It is also known as "marketability". Liquidity was calculated by dividing the total current assets by the total current liabilities.

Financial distress (FINDIST): Financial distress is a condition where a company has difficulty paying off its financial obligations to its creditors. The chance of financial distress increases when a firm has revenues that are sensitive to economic downturns, high fixed costs or illiquid assets. Volatility (standard deviation) of a firm's cash flow is used for the firm's observable risk and the probability of financial distress (S. Narayan Rao and Jijo Lukose P. J. (2001)).

Tax rate (TAXR): Tax rate is a rate placed depending on the profit of a firm; different rates are used for different levels of profits. Corporate taxes are usually levied by all levels of government (i.e. state and country). Tax rate can be measured for each company by dividing its tax provision by profit before tax.

Debt serving capacity (DSC): A high debt service capacity means that the firm can meet its interest obligation even if EBIT suffers a considerable decline. In other words, the higher the debt coverage, the greater is the likelihood of a firm having a higher debt component in its financial structure. So, the capacity of a firm to borrow will be directly proportional to its ability to honour its fixed payment obligation. Hence, higher the capacity of the company to service debt, the greater is the likelihood of the debt ratio being higher. The study proxies for debt with the ratio between profit before depreciation, interest and taxes to total interest.

Age (AGE): Age is the number of years since the establishment of a company. The dummy variable takes the value one if the firm is below the age of 20 years and zero otherwise.

Results

Results for regression analysis for Indian companies are given in Table 1.

Model 1: Indian companies and short term debt

Summary of objectives and hypotheses of model 1 is given in Table 2.

The results of the 10 independent variables of model 1 are given in Table 3.

Results of model 1 for objective number 1(a)

Objective number 1(a) was "To study and analyse the determinants of capital structure of Indian companies by investigating the impact of profitability on short term debt".

From Table 3, it can be observed that *t* value for profitability is −3.229 which is significant at .05 level. Therefore, the null hypothesis H_{011} namely, "There is no significant impact of profitability of Indian companies on short term debt" is rejected and hence it can be concluded that profitability produced significant impact on short term debt.

Results of model 1 for objective number 1(b)

Objective number 1(b) was "To study and analyse the determinants of capital structure of Indian companies by investigating the impact of growth on short term debt".

From Table 3, it can be observed that *t* value for growth is .398 which is not significant. Therefore, the null hypothesis H_{012} namely "There is no significant impact of growth of Indian companies on short term debt" is not

Table 1 Results of regression analysis for Indian companies.

	Indian companies		
	Short term debt ratio	Long term debt ratio	Total debt ratio
(Constant)	(−2.293)	(−16.71)	(−8.744)
PROF	−.114* (−3.229)	−.263* (−8.629)	−.320* (−11.096)
GROW	.014 (.398)	.121* (3.935)	.104* (3.584)
TAN	.089* (2.671)	.447* (15.016)	.360* (12.803)
SIZE	−.414* (−12.761)	−.007 (−.236)	−.187* (−6.745)
COD	.012 (.384)	−.078* (−2.786)	−.026 (−.970)
LIQ	.015 (.458)	.024 (.823)	.052 (1.914)
FINDIST	−.049 (−1.578)	−.050 (−1.773)	−.050 (−1.912)
TAXR	−.067* (−2.087)	−.093* (−3.222)	−.085* (−3.145)
DSC	−.143* (−4.354)	−.148* (−5.198)	−.209* (−7.745)
AGE	−.033 (−1.003)	.003 (.094)	−.003 (−.099)
R^2	.26	.337	.408

PROF: Profitability; GROW: Growth; TAN: Assets tangibility; SIZE: Size; COD: Cost of debt; LIQ: Liquidity; FINDIST: Financial distress; TAXR: Tax rate; DSC: Debt serving capacity; AGE: Age.

The table reflects standardized coefficients and values in parentheses represent *t*-statistics adjusted using the procedures of White (1980). Significance at 5% level is indicated by one asterisk.

Primary Data.

Table 2 Summary of objectives and hypotheses of model 1.

Objectives		Null hypotheses	
1(a)	To study and analyse the determinants of capital structure of Indian companies by investigating the impact of profitability on short term debt	H_{011}	There is no significant impact of profitability of Indian companies on short term debt
1(b)	To study and analyse the determinants of capital structure of Indian companies by investigating the impact of growth on short term debt	H_{012}	There is no significant impact of growth of Indian companies on short term debt
1(c)	To study and analyse the determinants of capital structure of Indian companies by investigating the impact of asset tangibility on short term debt	H_{013}	There is no significant impact of asset tangibility of Indian companies on short term debt
1(d)	To study and analyse the determinants of capital structure of Indian companies by investigating the impact of size on short term debt	H_{014}	There is no significant impact of size of Indian companies on short term debt
1(e)	To study and analyse the determinants of capital structure of Indian companies by investigating the impact of cost of debt on short term debt	H_{015}	There is no significant impact of Cost of debt of Indian companies on short term debt
1(f)	To study and analyse the determinants of capital structure of Indian companies by investigating the impact of liquidity on short term debt	H_{016}	There is no significant impact of liquidity of Indian companies on short term debt
1(g)	To study and analyse the determinants of capital structure of Indian companies by investigating the impact of financial distress on short term debt	H_{017}	There is no significant impact of financial distress of Indian companies on short term debt
1(h)	To study and analyse the determinants of capital structure of Indian companies by investigating the impact of tax rate on short term debt	H_{018}	There is no significant impact of tax rate of Indian companies on short term debt
1(i)	To study and analyse the determinants of capital structure of Indian companies by investigating the impact of debt serving capacity on short term debt	H_{019}	There is no significant impact of debt serving capacity of Indian companies on short term debt
1(j)	To study and analyse the determinants of capital structure of Indian companies by investigating the impact of age on short term debt	H_{0110}	There is no significant impact of age of Indian companies on short term debt

Primary Data.

rejected and hence it can be concluded that growth did not produce significant impact on short term debt.

Results of model 1 for objective number 1(c)
Objective number 1(c) was "To study and analyse the determinants of capital structure of Indian companies by investigating the impact of asset tangibility on short term debt".

From Table 3, it can be observed that *t* value for asset tangibility is 2.671 which is significant at .05 level. Therefore, the null hypothesis H_{013} namely "There is no significant impact of asset tangibility of Indian companies on short term debt" is rejected and hence it can be concluded that asset tangibility produced significant impact on short term debt.

Results of model 1 for objective number 1(d)
Objective number 1(d) was "To study and analyse the determinants of capital structure of Indian companies by investigating the impact of size on short term debt".

From Table 3 it can be observed that *t* value for size is −12.761 which is significant at .05 level. Therefore, the null hypothesis H_{014} namely "There is no significant impact of size of Indian companies on short term debt" is rejected and hence it can be concluded that size produced significant impact on short term debt.

Results of model 1 for objective number 1(e)
Objective number 1(e) was "To study and analyse the determinants of capital structure of Indian companies by investigating the impact of cost of debt on short term debt".

From Table 3, it can be observed that *t* value for cost of debt is .384 which is not significant. Therefore, the null hypothesis H_{015} namely "There is no significant impact of cost of debt of Indian companies on short term debt" is not rejected and hence it can be concluded that cost of debt did not produce significant impact on short term debt.

Results of model 1 for objective number 1(f)
Objective number 1(f) was "To study and analyse the determinants of capital structure of Indian companies by investigating the impact of liquidity on short term debt".

From Table 3, it can be observed that *t* value for liquidity is .458 which is not significant. Therefore, the null hypothesis H_{016} namely "There is no significant impact of liquidity of Indian companies on short term debt" is not

Table 3 Coefficients[a] and *t* value of the 10 independent variables of model 1.

Independent variables	Unstandardized coefficients		Standardized coefficients	*t*	Sig	Null hypothesis results
	B	Std. error	Beta			
(Constant)	−.478	.209		−2.293	.022	
PROF	−1.972	.611	−.114	−3.229	.001	Rejected
GROW	.084	.210	.014	.398	.691	Not rejected
TAN	.609	.228	.089	2.671	.008	Rejected
SIZE	−.303	.024	−.414	−12.761	.000	Rejected
COD	.001	.003	.012	.384	.701	Not rejected
LIQ	.005	.011	.015	.458	.647	Not rejected
FINDIST	−.002	.001	−.049	−1.578	.115	Not rejected
TAXR	−.462	.221	−.067	−2.087	.037	Rejected
DSC	−.006	.001	−.143	−4.354	.000	Rejected
AGE	−.103	.102	−.033	−1.003	.316	Not rejected

PROF: Profitability; GROW: Growth; TAN; Assets tangibility; SIZE: Size; COD: Cost of debt; LIQ: Liquidity; FINDIST: Financial distress; TAXR: Tax rate; DSC: Debt serving capacity; AGE: Age.

[a] Dependent variable: log STDR.

Primary Data.

rejected and hence it can be concluded that liquidity did not produce significant impact on short term debt.

Results of model 1 for objective number 1(g)

Objective number 1(g) was "To study and analyse the determinants of capital structure of Indian companies by investigating the impact of financial distress on short term debt".

From Table 3, it can be observed that *t* value for financial distress is −1.578 which is not significant. Therefore, the null hypothesis H_{017} namely "There is no significant impact of financial distress of Indian companies on short term debt" is not rejected and hence it can be concluded that financial distress did not produce significant impact on short term debt.

Results of model 1 for objective number 1(h)

Objective number 1(h) was "To study and analyse the determinants of capital structure of Indian companies by investigating the impact of tax rate on short term debt".

From Table 3 it can be observed that *t* value for tax rate is −2.087 which is significant at .05 level. Therefore, the null hypothesis H_{018} namely "There is no significant impact of tax rate of Indian companies on short term debt" is rejected and hence it can be concluded that tax rate produced significant impact on short term debt.

Results of model 1 for objective number 1(i)

Objective number 1(i) was "To study and analyse the determinants of capital structure of Indian companies by investigating the impact of debt serving capacity on short term debt".

From Table 3 it can be observed that *t* value for debt serving capacity is −4.354 which is significant at .05 level. Therefore, the null hypothesis H_{019} namely "There is no significant impact of debt serving capacity of Indian companies on short term debt" is rejected and hence it can be concluded that debt serving capacity produced significant impact on short term debt.

Results of model 1 for objective number 1(j)

Objective number 1(j) was "To study and analyse the determinants of capital structure of Indian companies by investigating the impact of age on short term debt".

From Table 3, it can be observed that *t* value for age is −1.003 which is not significant. Therefore, the null hypothesis H_{0110} namely "There is no significant impact of age of Indian companies on short term debt" is not rejected and hence it can be concluded that age did not produce significant impact on short term debt.

Model 2: Indian companies and long term debt

Summary of objectives and hypotheses of model 2 is given in Table 4.

The results of the 10 independent variables of model 2 are given in Table 5.

Results of model 2 for objective number 2(a)

Objective number 2(a) was "To study and analyse the determinants of capital structure of Indian companies by investigating the impact of profitability on long term debt".

From Table 5 it can be observed that *t* value for profitability is −8.629 which is significant at .05 level. Therefore, the null hypothesis H_{021} namely "There is no significant impact of profitability of Indian companies on long term debt" is rejected and hence it can be concluded that profitability produced significant impact on long term debt.

Results of model 2 for objective number 2(b)

Objective number 2(b) was "To study and analyse the determinants of capital structure of Indian companies by investigating the impact of growth on long term debt".

From Table 5 it can be observed that *t* value for growth is 3.935 which is significant at .05 level. Therefore, the null hypothesis H_{022} namely "There is no significant impact of growth of Indian companies on long term debt" is rejected and hence it can be concluded that growth produced significant impact on long term debt.

Table 4 Summary of objectives and hypotheses of model 2.

Objectives		Null hypotheses	
2(a)	To study and analyse the determinants of capital structure of Indian companies by investigating the impact of profitability on long term debt	H_{021}	There is no significant impact of profitability of Indian companies on long term debt
2(b)	To study and analyse the determinants of capital structure of Indian companies by investigating the impact of growth on long term debt	H_{022}	There is no significant impact of growth of Indian companies on long term debt
2(c)	To study and analyse the determinants of capital structure of Indian companies by investigating the impact of asset tangibility on long term debt	H_{023}	There is no significant impact of asset tangibility of Indian companies on long term debt
2(d)	To study and analyse the determinants of capital structure of Indian companies by investigating the impact of size on long term debt	H_{024}	There is no significant impact of size of Indian companies on long term debt
2(e)	To study and analyse the determinants of capital structure of Indian companies by investigating the impact of cost of debt on long term debt	H_{025}	There is no significant impact of cost of debt of Indian companies on long term debt
2(f)	To study and analyse the determinants of capital structure of Indian companies by investigating the impact of liquidity on long term debt	H_{026}	There is no significant impact of liquidity of Indian companies on long term debt
2(g)	To study and analyse the determinants of capital structure of Indian companies by investigating the impact of financial distress on long term debt	H_{027}	There is no significant impact of financial distress of Indian companies on long term debt
2(h)	To study and analyse the determinants of capital structure of Indian companies by investigating the impact of tax rate on long term debt	H_{028}	There is no significant impact of tax rate of Indian companies on long term debt
2(i)	To study and analyse the determinants of capital structure of Indian companies by investigating the impact of debt serving capacity on long term debt	H_{029}	There is no significant impact of debt serving capacity of Indian companies on long term debt
2(j)	To study and analyse the determinants of capital structure of Indian companies by investigating the impact of age on long term debt	H_{0210}	There is no significant impact of age of Indian companies on long term debt

Primary Data.

Results of model 2 for objective number 2(c)

Objective number 2(c) was "To study and analyse the determinants of capital structure of Indian companies by investigating the impact of asset tangibility on long term debt".

From Table 5 it can be observed that *t* value for asset tangibility is 15.016 which is significant at .05 level. Therefore, the null hypothesis H_{023} namely "There is no significant impact of asset tangibility of Indian companies on long term debt" is rejected and hence it can be concluded that asset tangibility produced significant impact on long term debt.

Results of model 2 for objective number 2(d)

Objective number 2(d) was "To study and analyse the determinants of capital structure of Indian companies by investigating the impact of size on long term debt".

From Table 5 it can be observed that *t* value for size is −.236 which is not significant. Therefore, the null hypothesis H_{024} namely "There is no significant impact of size of Indian companies on long term debt" is not rejected and hence it can be concluded that size did not produce significant impact on long term debt.

Results of model 2 for objective number 2(e)

Objective number 2(e) was "To study and analyse the determinants of capital structure of Indian companies by investigating the impact of cost of debt on long term debt".

From Table 5 it can be observed that *t* value for cost of debt is −2.786 which is significant at .05 level.

Table 5 Coefficients[a] and *t* value of the 10 independent variables of model 2.

Independent variables	Unstandardized coefficients		Standardized coefficients	*t*	Sig	Null hypothesis results
	B	Std. error	Beta			
(Constant)	−2.221	.133		−16.710	.000	
PROF	−3.195	.370	−.263	−8.629	.000	Rejected
GROW	.534	.136	.121	3.935	.000	Rejected
TAN	2.198	.146	.447	15.016	.000	Rejected
SIZE	−.004	.015	−.007	−.236	.813	Rejected
COD	−.005	.002	−.078	−2.786	.005	Rejected
LIQ	.006	.008	.024	.823	.411	Not rejected
FINDIST	−.002	.001	−.050	−1.773	.077	Not rejected
TAXR	−.472	.147	−.093	−3.222	.001	Rejected
DSC	.000	.000	−.148	−5.198	.000	Rejected
AGE	.006	.067	.003	.094	.925	Not Rejected

PROF: Profitability; GROW: Growth; TAN; Assets tangibility; SIZE: Size; COD: Cost of debt; LIQ: Liquidity; FINDIST: Financial distress; TAXR: Tax rate; DSC: Debt serving capacity; AGE: Age.

[a] Dependent variable: log LTDR.

Primary Data.

Therefore, the null hypothesis H_{025} namely "There is no significant impact of cost of debt of Indian companies on long term debt" is rejected and hence it can be concluded that cost of debt produced significant impact on long term debt.

Results of model 2 for objective number 2(f)

Objective number 2(f) was "To study and analyse the determinants of capital structure of Indian companies by investigating the impact of liquidity on long term debt".

From Table 5 it can be observed that *t* value for liquidity is .823 which is not significant. Therefore, the null hypothesis H_{026} namely "There is no significant impact of liquidity of Indian companies on long term debt" is not rejected and hence it can be concluded that liquidity did not produce significant impact on long term debt.

Results of model 2 for objective number 2(g)

Objective number 2(g) was "To study and analyse the determinants of capital structure of Indian companies by investigating the impact of financial distress on long term debt".

From Table 5 it can be observed that *t* value for financial distress is −1.773 which is not significant. Therefore, the null hypothesis H_{027} namely "There is no significant impact of financial distress of Indian companies on long term debt" is not rejected and hence it can be concluded that financial distress did not produce significant impact on long term debt.

Results of model 2 for objective number 2(h)

Objective number 2(h) was "To study and analyse the determinants of capital structure of Indian companies by investigating the impact of tax rate on long term debt".

From Table 5 it can be observed that *t* value for tax rate is −3.222 which is significant at .05 level. Therefore, the null hypothesis H_{028} namely "There is no significant impact of tax rate of Indian companies on long term debt" is rejected and hence it can be concluded that tax rate produced significant impact on long term debt.

Results of model 2 for objective number 2(i)

Objective number 2(i) was "To study and analyse the determinants of capital structure of Indian companies by investigating the impact of debt serving capacity on long term debt".

From Table 5 it can be observed that *t* value for debt serving capacity is −5.198 which is significant at .05 level. Therefore, the null hypothesis H_{029} namely "There is no significant impact of debt serving capacity of Indian companies on long term debt" is rejected and hence it can be concluded that debt serving capacity produced significant impact on long term debt.

Results of model 2 for objective number 2(j)

Objective number 2(j) was "To study and analyse the determinants of capital structure of Indian companies by investigating the impact of age on long term debt".

From Table 5 it can be observed that *t* value for age is .094 which is not significant. Therefore, the null hypothesis H_{0210} namely "There is no significant impact of age of Indian companies on long term debt" is not rejected and hence it can be concluded that age did not produce significant impact on long term debt.

Model 3: Indian companies and total debt

Summary of objectives and hypotheses of model 3 is given in Table 6.

The results of the 10 independent variables of model 3 are given in Table 7.

Results of model 3 for objective number 3(a)

Objective number 3(a) was "To study and analyse the determinants of capital structure of Indian companies by investigating the impact of profitability on total debt".

From Table 7 it can be observed that *t* value for profitability is −11.096 which is significant at .05 level. Therefore, the null hypothesis H_{031} namely "There is no significant impact of profitability of Indian companies on total debt" is rejected and hence it can be concluded that profitability produced significant impact on total debt.

Table 6 Summary of objectives and hypotheses of model 3.

Objectives		Null hypotheses	
3(a)	To study and analyse the determinants of capital structure of Indian companies by investigating the impact of profitability on total debt	H_{031}	There is no significant impact of profitability of Indian companies on total debt
3(b)	To study and analyse the determinants of capital structure of Indian companies by investigating the impact of growth on total debt	H_{032}	There is no significant impact of growth of Indian companies on total debt
3(c)	To study and analyse the determinants of capital structure of Indian companies by investigating the impact of asset tangibility on total debt	H_{033}	There is no significant impact of asset tangibility of Indian companies on total debt
3(d)	To study and analyse the determinants of capital structure of Indian companies by investigating the impact of size on total debt	H_{034}	There is no significant impact of size of Indian companies on total debt
3(e)	To study and analyse the determinants of capital structure of Indian companies by investigating the impact of cost of debt on total debt	H_{035}	There is no significant impact of cost of debt of Indian companies on total debt
3(f)	To study and analyse the determinants of capital structure of Indian companies by investigating the impact of liquidity on total debt	H_{036}	There is no significant impact of liquidity of Indian companies on total debt
3(g)	To study and analyse the determinants of capital structure of Indian companies by investigating the impact of financial distress on total debt	H_{037}	There is no significant impact of financial distress of Indian companies on total debt
3(h)	To study and analyse the determinants of capital structure of Indian companies by investigating the impact of tax rate on total debt	H_{038}	There is no significant impact of tax rate of Indian companies on total debt
3(i)	To study and analyse the determinants of capital structure of Indian companies by investigating the impact of debt serving capacity on total debt	H_{039}	There is no significant impact of debt serving capacity of Indian companies on total debt
3(j)	To study and analyse the determinants of capital structure of Indian companies by investigating the impact of age on total debt	H_{0310}	There is no significant impact of age of Indian companies on total debt

Primary Data.

Results of model 3 for objective number 3(b)
Objective number 3(b) was "To study and analyse the determinants of capital structure of Indian companies by investigating the impact of growth on total debt".

From Table 7 it can be observed that *t* value for growth is 3.584 which is significant at .05 level. Therefore, the null hypothesis H_{032} namely "There is no significant impact of growth of Indian companies on total debt" is rejected and hence it can be concluded that growth produced significant impact on total debt.

Results of model 3 for objective number 3(c)
Objective number 3(c) was "To study and analyse the determinants of capital structure of Indian companies by investigating the impact of asset tangibility on total debt".

From Table 7 it can be observed that *t* value for asset tangibility is 12.803 which is significant at .05 level. Therefore, the null hypothesis H_{033} namely "There is no significant impact of asset tangibility of Indian companies on total debt" is rejected and hence it can be concluded that asset tangibility produced significant impact on total debt.

Results of model 3 for objective number 3(d)
Objective number 3(d) was "To study and analyse the determinants of capital structure of Indian companies by investigating the impact of size on total debt".

From Table 7 it can be observed that *t* value for size is −6.745 which is significant at .05 level. Therefore, the null hypothesis H_{034} namely "There is no significant impact of size of Indian companies on total debt" is rejected and hence it can be concluded that size produced significant impact on total debt.

Results of model 3 for objective number 3(e)
Objective number 3(e) was "To study and analyse the determinants of capital structure of Indian companies by investigating the impact of cost of debt on total debt".

From Table 7 it can be observed that *t* value for cost of debt is −.970 which is not significant. Therefore, the null hypothesis H_{035} namely "There is no significant impact of cost of debt of Indian companies on total debt" is not rejected and hence it can be concluded that cost of debt did not produce significant impact on total debt.

Results of model 3 for objective number 3(f)
Objective number 3(f) was "To study and analyse the determinants of capital structure of Indian companies by investigating the impact of liquidity on total debt".

From Table 7 it can be observed that *t* value for liquidity is 1.914 which is not significant. Therefore, the null hypothesis H_{036} namely "There is no significant impact of

Table 7 Coefficients[a] and *t* value of the 10 independent variables of model 3.

Independent variables	Unstandardized coefficients		Standardized coefficients	*t*	Sig	Null hypothesis results
	B	Std. error	Beta			
(Constant)	−1.021	.117		−8.744	.000	
PROF	−3.608	.325	−.320	−11.096	.000	Rejected
GROW	.427	.119	.104	3.584	.000	Rejected
TAN	1.646	.129	.360	12.803	.000	Rejected
SIZE	−.089	.013	−.187	−6.745	.000	Rejected
COD	−.002	.002	−.026	−.970	.332	Not rejected
LIQ	.013	.007	.052	1.914	.056	Not rejected
FINDIST	−.001	.001	−.050	−1.912	.056	Not rejected
TAXR	−.405	.129	−.085	−3.145	.002	Rejected
DSC	−.001	.000	−.209	−7.745	.000	Rejected
AGE	−.006	.059	−.003	−.099	.921	Not rejected

PROF: Profitability; GROW: Growth; TAN; Assets tangibility; SIZE: Size; COD: Cost of debt; LIQ: Liquidity; FINDIST: Financial distress; TAXR: Tax rate; DSC: Debt serving capacity; AGE: Age.

[a] Dependent variable: log TDR.

Primary Data.

liquidity of Indian companies on total debt" is not rejected and hence it can be concluded that liquidity did not produce significant impact on total debt.

Results of model 3 for objective number 3(g)

The objective number 3(g) was "To study and analyse the determinants of capital structure of Indian companies by investigating the impact of financial distress on total debt".

From Table 7 it can be observed that *t* value for financial distress is −1.912 which is not significant. Therefore, the null hypothesis H_{037} namely "There is no significant impact of financial distress of Indian companies on total debt" is not rejected and hence it can be concluded that financial distress did not produce significant impact on total debt.

Results of model 3 for objective number 3(h)

Objective number 3(h) was "To study and analyse the determinants of capital structure of Indian companies by investigating the impact of tax rate on total debt".

From Table 7 it can be observed that *t* value for tax rate is −3.145 which is significant at .05 level. Therefore, the null hypothesis H_{038} namely "There is no significant impact of tax rate of Indian companies on total debt" is rejected and hence it can be concluded that tax rate produced significant impact on total debt.

Results of model 3 for objective number 3(i)

Objective number 3(i) was "To study and analyse the determinants of capital structure of Indian companies by investigating the impact of debt serving capacity on total debt".

From Table 7 it can be observed that *t* value for debt serving capacity is −7.745 which is significant at .05 level. Therefore, the null hypothesis H_{039} namely "There is no significant impact of debt serving capacity of Indian companies on total debt" is rejected and hence it can be concluded that debt serving capacity produced significant impact on total debt.

Results of model 3 for objective number 3(j)

Objective number 3(j) was "To study and analyse the determinants of capital structure of Indian companies by investigating the impact of age on total debt".

From Table 7 it can be observed that *t* value for age is −.099 which is not significant. Therefore, the null hypothesis H_{0310} namely "There is no significant impact of age of Indian companies on total debt" is not rejected and hence it can be concluded that age did not produce significant impact on total debt.

Conclusion

The findings contribute towards a better understanding of financing behaviour in Indian companies during the period of 2001−2010. Hypotheses based on comparing the relationships between short term debt, long term debt, and total debt and 10 explanatory variables that represent profitability, growth, asset tangibility, size, cost of debt, liquidity, financial distress, tax rate debt serving capacity, and age were developed to test which independent variable best explained the capital structure of Indian companies.

Measures of the traditional factor that are hypothesized to affect financing decision of Indian companies namely, profitability, asset tangibility, size, tax rate, and debt servicing capacity have significant impact while raising short term debt; profitability, growth, asset tangibility, cost of debt, tax rate, and debt serving capacity have significant impact while raising long term debt; and profitability, growth, asset tangibility, size, tax rate, and debt serving capacity have significant impact while considering total debt while making capital structure decisions of Indian companies.

Managing capital structure thus becomes a balancing act. The trade-off a company makes between financial flexibility and fiscal discipline is the most important consideration in determining its capital structure and far outweighs any tax benefits, which are negligible for most large companies unless they have extremely low debt.

Mature companies with stable and predictable cash flows as well as limited investment opportunities should include more debt in their capital structure, since the discipline that debt often brings outweighs the need for flexibility. Companies that face high uncertainty because of vigorous growth or the cyclical nature of their industries should carry less debt, so that they have enough flexibility to take advantage of investment opportunities or to deal with negative events.

This study distinguishes itself from previous research with the introduction of key variables such as profitability, liquidity, asset tangibility, cost of debt, financial distress, debt serving capacity, and age, that have not been studied previously in papers related specifically to Indian firms.

The study has concentrated on one economy rather than several and covers a horizon of 10 years covering two recessions. This has not been the case with previous studies since they faced the limitation of data not being available for the full period of the study.

Booth et al. (2001) covered only large companies, and it is not clear whether their results could be applicable to small and medium-sized companies. The current study investigates the determinants of capital structure across the whole spectrum of listed companies (from small to large).

Bhaduri (2002) used a five-year span (due to limitations on data) while setting up his benchmark model for further research in the field. This study builds on previous studies and sets itself as a complement to previous benchmark studies and indicates directions for future research in determining factors for emerging economies. We submit that the study is a major contribution to the capital structure literature — it makes a large number of observations in comparison to previous studies. The research will also be important for policy decisions regarding the issues around the role of the banking sector, institutional investors, and bond markets in providing finance to corporations.

In the present context when there are fluctuations in the interest rates and stock markets, the study will be helpful for academicians, industrialists, and regulators and it will enable the concerned parties to make informed decisions in the area of managing their capital. It will act as a guide to newly established companies to help them determine what factors should be relevant for them to make financing and capital structure decisions.

For future research, the authors plan to study several macro-economic factors that influence capital structure decisions. This will include factors such as capital formation, stock market development, financial stability of country, corporate tax, terrorism threat, direct foreign investment, and so on. Researchers with longer timeline datasets can develop a stronger model by including additional firm specific factors like uniqueness factor (uniqueness of product), collateral value factor, carry forwards, discount rates, quality spreads, etc. Although these factors are not the core factors in financial structure decisions, they have been shown to have effects in previous studies of developed economies. Researchers can utilize this paper to develop stronger models for research into the capital structure determinants for emerging economies.

References

Bhaduri, S. (2002). Determinants of capital structure choice: a study of the Indian corporate sector. *Applied Financial Economics, 12*(9), 655—665.

Booth, L., Aivazian, V., Demirguc-Kunt, A., & Maksmivoc, V. (2001). Capital structure in developing countries. *Journal of Finance, 56*, 87—130.

Bradley, M., Jarrell, G., & Kim, E. (1984). On the existence of an optimal capital structure: theory and evidence. *Journal of Finance, 39*(3), 857—880.

Brander, J., & Lewis, T. (1986). Oligopoly and financial structure: the limited liability effect. *American Economic Review, 76*(5), 956—970.

Constantinides, G., & Grundy, B. (1989). Optimal investment with stock repurchase and financing as signals. *The Review of Financial Studies, 2*(4), 445—466.

Copeland, T. E., & Weston, J. F. (1983). Financial theory and corporate policy.

Correia, C., Flynn, D., Uliana, E., & Wrmald, M. (2000). *Financial management* (6th ed.). Cape Town: Juta.

De Jong, A., Kabir, R., & Nguyen, T. (2008). Capital structure around the world: the roles of firm- and country-specific determinants. *Journal of Banking and Finance, 32*(9), 1954—1969.

Demirguc-Kunt, A., & Maksimovic, V. (1996). Stock market development and firm financing choices. *World Bank Economic Review, 10*(2), 341—369.

Diamond, D. (1989). Reputation acquisition in debt markets. *Journal of Political Economy, 97*(4), 828—862.

Dybvig, P., & Zender, J. (1989). *Capital structure and dividend irrelevance with asymmetric information*. Working Paper. Yale School of Organisation and Management.

Harris, M., & Raviv, A. (1990). Capital structure and the informational role of debt. *Journal of Finance, 45*(2), 321—349.

Haugen, R., & Senbet, L. (1978). The insignificance of bankruptcy costs to the theory of optimal capital structure. *Journal of Finance, 33*(2), 383—393.

Hirschleifer, D., & Thakor, A. (1989). *Managerial reputation, project choice and debt*. Working Paper No. 14—89. Anderson Graduate School of Management at UCLA.

Jensen, M. (1986). Agency costs of free cash flow, corporate finance and takeovers. *American Economic Review, 76*(2), 323—329.

Jensen, M., & Meckling, W. (1976). Theory of the firm: managerial behaviour, agency costs and ownership structure. *Journal of Financial Economics, 3*(4), 305—360.

Korajczyk, R., Lucas, D., & McDonald, R. (1990). *The effect of information release on the pricing and timing of equity issues*. Working Paper No. 83. Kellogg School, North Western University.

Krasker, W. (1986). Stock price movements in response to stock issues under asymmetric information. *Journal of Finance, 41*, 93—105.

Kraus, A., & Litzenberger, R. H. (1973). A state preference model of optimal financial leverage. *The Journal of Finance, 28*(4), 911—922.

Leland, H., & Pyle, D. (1977). Information asymmetrics, financial structure and financial intermediation. *Journal of Finance, 32*(2), 371—388.

Maksimovic, V. (1988). Capital structure in repeated oligopolies. *Rand Journal of Economics, 19*(3), 389—407.

Masulis, R. (1988). *The debt/equity choice*. New York: Ballinger Publishing Company.

Mayer, C. (1990). Financial systems, corporate finance and economic development. In R. G. Hubbard (Ed.), *Asymmetric information, corporate finance, and investment*. Chicago, Ill: University of Chicago Press.

Modigliani, F., & Miller, M. (1958). The cost of capital, corporation finance, and the theory of investment. *American Economic Review, 48*(3), 261—297.

Modigliani, F., & Miller, M. (1963). Corporate income taxes and the cost of capital, a correction. *American Economic Review, 53*(3), 433—443.

Modigliani, F., & Miller, M. (1977). Debt and taxes. *Journal of Finance, 32*(2), 261—276.

Myers, S. C., & Majluf, N. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics, 13*(2), 187—221.

Rajan, R., & Zingales, L. (1995). What do we know about capital structure? Some evidence from international data. *Journal of Finance, 50*(5), 1421—1460.

Ronn, E., & Senbet, L. W. (1995). Debt and market incompleteness. *Journal of Banking and Finance, 19*(8), 1379—1400.

Sarig, O. (1988). *Bargaining with a corporation and the capital structure of the bargaining firm*. Working Paper. Tel Aviv University.

Stulz, R. (1990). Managerial discretion and optimal financing policies. *Journal of Financial Economics, 26*(1), 3—27.

Taggart, R. A. (1985). Secular patterns in the financing of U.S. Corporations. In Benjamin M. Friedman (Ed.), *Corporate capital structure in the United States* (13—75). Chicago: University of Chicago Press.

Titman, S. (1984). The effect of capital structure on a firm's liquidation decision. *Journal of Financial Economics, 13*(1), 137—151.

Titman, S., & Wessels, R. (1988). The determinants of capital structure choice. *Journal of Finance, 43*(1), 1—19.

White, H. (1980). A hetroskedasticity consistent covariance martrixestimator and a direct test for hetroskedasticity. *Econometrica, 48*(4), 817—838.

Web references

http://online.wsj.com/news/articles/SB124027187331937083.